

## Functional magnetic resonance imaging outcomes from a comprehensive magnetic resonance study of children with fetal alcohol spectrum disorders.

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### ABSTRACT

**Purpose:** A comprehensive neuropsychological/psychiatric, MR imaging, (MRI), MR spectroscopy (MRS), and functional MRI (fMRI) assessment was administered to children with fetal alcohol spectrum disorders (FASD) to determine if global and/or focal abnormalities could be identified, and distinguish diagnostic subclassifications across the spectrum.

**Methods:** The four study groups included: 1. FAS/Partial FAS; 2. Static Encephalopathy/Alcohol Exposed (SE/AE); 3. Neurobehavioral Disorder/Alcohol Exposed (ND/AE); and 4. healthy peers with no prenatal alcohol exposure. fMRI outcomes are reported here. The neuropsychological/psychiatric, MRI, and MRS outcomes are reported separately. fMRI was used to assess activation in seven brain regions during performance of N-back working memory tasks.

**Results:** Children across the full spectrum of FASD exhibited significant working memory deficits and altered activation patterns in brain regions that are known to be involved in working memory.

**Conclusions:** These results demonstrate the potential research and diagnostic value of this non-invasive MR tool in the field of FASD.